

## CLAIMS

1. A particulate filter for an internal combustion engine comprising:
  - a microwave source generating microwaves;
  - microwave-absorbing materials to absorb said microwaves and
  - 5 generate heat; and
  - a particulate trap trapping particulates generated by the engine, said particulate trap heated by said microwave-absorbing materials to burn off said particulates.
2. The particulate filter of Claim 1 wherein said microwave-absorbing material is configured as an end plug.
3. The particulate filter of Claim 1 wherein said microwave-absorbing material is configured as axial bands distributed along channels of said particulate trap.
4. The particulate filter of Claim 1 wherein said microwave-absorbing material is deposited in substantially linear fashion along the length of the channels of said particulate trap.
5. The particulate filter of Claim 1 wherein said microwave-absorbing material is silicon carbide.
6. The particulate filter of Claim 1 wherein said particulate trap is comprised of a microwave-transparent material.
7. The particulate filter of Claim 6 wherein said microwave-transparent material is chordierite.

8. A method of regenerating a particulate trap comprising:  
generating microwave radiation; and  
absorbing microwaves to generate heat to burn particulates in the  
particulate trap.

9. The method of Claim 8 further comprising the step of  
depositing microwave-absorbent material along walls of the particulate trap.

10. The method of Claim 8 further comprising the step of  
configuring microwave-absorbent material as end plugs in the particulate  
trap.

11. The method of Claim 8 further comprising the step of  
controlling the temperature of the particulate trap by controlling the  
microwave radiation.

12. A system for removing particulates in a particulate trap  
comprising:

a microwave power source;

a microwave antenna coupled to said power source for generating  
5 microwaves;

a microwave wave guide operatively coupled to said microwave  
antenna to guide said microwaves; and

microwave-absorbent material located in said particulate trap,  
wherein said microwaves are incident upon said microwave-absorbent  
10 material to generate heat to burn off particulates located in said particulate  
trap.

13. The system of Claim 12 further comprising a diesel engine coupled to said particulate trap, wherein diesel exhaust propagates through said particulate trap.

14. A method of initiating regeneration in a particulate trap comprising the steps of:

locating microwave-absorbing material in the particulate trap in areas that particulates build up;

5 generating microwaves;

absorbing microwaves with the microwave-absorbing material;

and

controlling the microwaves to initiate a burn-off of particulates.